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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,216	10/16/2000	KNUD ERIK BAEKGAARD	740119-98	8804

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EXAMINER

GRIER, LAURA A

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

2/3

Office Action Summary	Application No. 09/688,216	Applicant(s) BAEKGAARD ET AL.	
	Examiner Laura A Grier	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 13-20 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. The examiner accepts the submitted changes of the specification. However, it is suggested that a copy of the technical report cited be submitted via a 1449 form (Information Disclosure Statement).

2. The indicated allowability of claim 3, 6-7, and 10 is withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 3, lines 5-6, recites "...performing a comparison between the linear sound before filtering and sound after digital filtering." According to the drawings of the specification, the signal is input to a pre-emphasis filter prior to input in the digital filter. Therefore the claim language is rendered indefinite as to when or which filtering processes are being compared. The signal prior to input into the pre-emphasis constitutes an unfiltered signal.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harley in view of Bose et al., U. S. Patent No. 5008939.

Regarding **claim 1**, Harley discloses an active noise control stethoscope (figures 1-4).

Harley's disclosure comprises a sensor means, which inherently teaches a vibration transducer as evident by the fact that sensor detects body sounds (vibrations, etc.) and converts the sound into electrical signals (col. 10, lines 55-60); a headset (13), which constitutes as headphones; a FIR filter for providing amplification (col. 10, lines 10-12); and a digital filter (col. 7, lines 5-27), wherein the electric stethoscope provides an acoustic output; and as well a noise control stethoscope constitutes as a type of acoustic stethoscope. However, Harley fails to specifically disclose a pre-emphasis filter means. The examiner maintains that such a filter was well known in the art.

Regarding the filter, in a similar field of endeavor, Bose et al. (herein, Bose) discloses a pre-emphasis filter (38) the emphasizes high frequencies, which functions as a shelf filter, which would reads on a pre-emphasis filter with comprising a high-pass shelving filter (col. 8, lines 36-50 and figure 5).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley by incorporating a pre-emphasis filter before a

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digital filter for the purpose enable the signal to have a better representation of the high frequency signal (amplification) to ensure adequate process by the digital filter to ensure efficient noise control or suppression of the detected body signal.

Even though, Harley and Bose fail to disclose the shelving filter limited to 3kHz. A filter having a cut off frequency of any function value was well known in the art. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley and Bose by implementing a specific cut off frequency of 3kHz for acquiring the desired function of the filter for optimal performance of the stethoscope.

Regarding **claim 9**, Harley and Bose disclose everything claimed as applied above (see claim 1). Harley further discloses support providing automatic amplification control (col. 10, lines 25-30).

Regarding **claim 11**, Harley and Bose disclose everything claimed as applied above (see claim 1). Harley further discloses the headphone arrangement with transducer fitted in an immediate proximity of the ear canal of each ear (figure 1 and col. 5, lines 46-51).

Regarding **claim 12**, Harley and Bose disclose everything claimed as applied above (see claim 1). Harley further discloses means of providing adequate compensation (col. 9, lines 63-67 and col. 10, lines 25-46).

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harley in view of Hower.

Regarding **claim 6**, Harley discloses an active noise control stethoscope (figures 1-4). Harley's disclosure comprises a sensor means, which inherently teaches a vibration transducer as

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evident by the fact that sensor detects body sounds (vibrations, etc.) and converts the sound into electrical signals (col. 10, lines 55-60); a headset (13), which constitutes as headphones; a FIR filter for providing amplification (col. 10, lines 10-12); and a digital filter (col. 7, lines 5-27), wherein the electric stethoscope provides an acoustic output; and as well a noise control stethoscope constitutes as a type of acoustic stethoscope, wherein, the noise control stethoscope itself constitutes a specific type of acoustic stethoscope. However, Harley fails to specifically disclose a pre-emphasis filter means. The examiner maintains that such a filter was well known in the art.

Regarding the filter, in a similar field of endeavor, Hower discloses electronic a stethoscope that includes a filter integrated with an amplifier (abstract and col. 1, lines 32-41), which reads a pre-emphasis filter means.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley by incorporating a filter as taught by Hower for the purpose of removing unwanted frequencies (high frequencies) and amplifying low frequencies from a range of 25 to 150-200Hz, providing superior noise rejection as taught by Hower.

Regarding **claims 7 and 8**, Harley discloses an active noise control stethoscope (figures 1-4). Harley's disclosure comprises a sensor means, which inherently teaches a vibration transducer as evident by the fact that sensor detects body sounds (vibrations, etc.) and converts the sound into electrical signals (col. 10, lines 55-60); a headset (13), which constitutes as headphones; a FIR filter for providing amplification (col. 10, lines 10-12); and a digital filter (col. 7, lines 5-27), wherein the electric stethoscope provides an acoustic output; and as well a noise control stethoscope constitutes as a type of acoustic stethoscope, wherein, the noise control

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stethoscope itself constitutes a specific type of acoustic stethoscope. However, Harley fails to specifically disclose a pre-emphasis filter means. The examiner maintains that such a filter was well known in the art.

Regarding the filter, in a similar field of endeavor, Hower discloses electronic a stethoscope that includes a filter integrated with an amplifier (abstract and col. 1, lines 32-41), which reads a pre-emphasis filter means.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley by incorporating a filter as taught by Hower for the purpose of removing unwanted frequencies (high frequencies) and amplifying low frequencies from a range of 25 to 150-200Hz, providing superior noise rejection as taught by Hower.

Further, Harley and Hower fail to disclose a digital pattern recognition for windowing. The examiner takes official notice that a digital pattern recognition was well known in the art. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley and Hower by providing a digital pattern recognition for windowing the detected signal for extracting ambient noise picked up by the transducer to ensure efficient noise suppression, wherein the technique (windowing) is commonly used for in conjunction with digital filter for reducing noise in an acoustic signal.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harley in view of Bose.

Regarding **claim 10**, Harley discloses an active noise control stethoscope (figures 1-4). Harley's disclosure comprises a sensor means, which inherently teaches a vibration transducer as

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evident by the fact that sensor detects body sounds (vibrations, etc.) and converts the sound into electrical signals (col. 10, lines 55-60); a headset (13), which constitutes as headphones; a FIR filter for providing amplification (col. 10, lines 10-12); and a digital filter (col. 7, lines 5-27), wherein the electric stethoscope provides an acoustic output; and as well a noise control stethoscope constitutes as a type of acoustic stethoscope. However, Harley fails to specifically disclose a pre-emphasis filter means. The examiner maintains that such a filter was well known in the art.

Regarding the filter, in a similar field of endeavor, Bose et al. (herein, Bose) discloses a pre-emphasis filter (38) the emphasizes high frequencies, which functions as a shelf filter, which would reads on a pre-emphasis filter (col. 8, lines 36-50 and figure 5).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Harley by incorporating a pre-emphasis filter before a digital filter for the purpose enable the signal to have a better representation of the high frequency signal (amplification) to ensure adequate process by the digital filter to ensure efficient noise control or suppression of the detected body signal.

And further, it would be obvious that the pre-emphasis means acts in dependence of the thickness of tissue (body surface of a patient), as evident by the fact that all factors are taking in consideration when taking acoustical or auscultation sounds of a body in respect what generates the sound and with what and how it is being transmitted to achieve an efficient quality sound.

Claims 5 and 13-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

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Regarding claim 5, the prior art of record is drawn to an electronic digital stethoscope with a microphone (transducer), an amplifier, headphones, a pre-emphasis filter and a digital filter. However, the prior art of record fails to disclose or fairly suggest the digital filter comprising a multiple set of coefficients for producing multiple impulse transfer functions corresponding to multiple acoustic stethoscope types.

Regarding claim 13, the prior art of record is drawn to an electronic digital stethoscope with a microphone (transducer), an amplifier, headphones, a pre-emphasis filter and a digital filter. However, the prior art of record fails to disclose or fairly suggest a processing means for producing a different sound signal to be sent to each left and right ear.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

The applicant essentially argues that prior art of Harley and Hower fail to disclose the pre-emphasis filter as claimed and in respect to the context of the invention. In respect claim 1 and 10, a new reference of prior art has been added to compliment Harley by teaching a pre-emphasis filter for amplifying high frequencies in respect to noise reduction. The Hower reference of prior art has been removed from the rejection of claim 1. However, Hower has been maintained in the rejection of claims 6-8, wherein, the claim language recites "...a pre-emphasis filter means for emphasizing high frequencies...". The broadest interpretation of claim language has been used in the rejection of claim in respect to the matter that the type of emphasis applied to the high frequencies has not been specifically claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Piribauer, U. S. Patent No. 3943304, discloses a headphone operating on the two-way system.

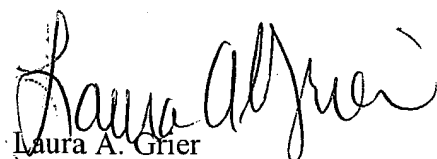
Stroud et al., U. S. Patent No. 6807280 discloses audio signal processing circuit for reducing noise in an audio signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A Grier whose telephone number is (703) 306-4819. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Laura A. Grier". The signature is fluid and cursive, with the first name "Laura" being more prominent.

Laura A. Grier
December 17, 2004